

IN THE SPECIFICATION:

The Applicants hereby amend the paragraph starting on page 2, line 10 of the specification as follows:

A known embodiment of a digital transcoder is disclosed in the article cited in the introduction, "*Transcoder Architecture for Video Coding*," on page 3, in connection with the block diagram shown there. This block diagram illustration is reproduced in FIG. 2. The known transcoder 4 consists of a recurrent circuit of a complete MPEG-2 video decoder 10 and a complete MPEG-2 video coder 20. The MPEG-2 video decoder 10 has a series circuit that includes an input buffer 11, a variable length code (VLC) decoder 12, a dequantizer 13, an inverse discrete cosine transformation (IDCT) stage 14, and a series-connected addition unit 15. The output signal of the addition stage 15 is conducted to one input of the adder 30 of the MPEG-2 video coder 20, and at the same time is conducted to a second input of the addition stage 15 at a picture memory 16 with series-connected motion compensation stage 17.

The Applicants hereby amend the paragraph starting on page 11, line 6 and continuing on page 12 of the specification as follows:

The bit-rate control converts, as necessary, an input bit stream with a variable bit rate (VBR) bit stream into a transcoded bit stream with a constant bit rate (CBR) bit stream. The video bit streams on the DVD video generally are VBR bit streams. VBR bit streams markedly differ from CBR bit streams in several points. As the name already expresses, VBR bit streams have a time-variable bit rate. For example, the bandwidth needed to transmit a VBR bit stream varies with time. In contrast, a CBR bit stream requires the same bandwidth at all times since the bit rate is constant over time. The bit-rate characteristic is reflected in the data quantity per picture. A VBR bit stream has a strongly varying data quantity per picture. Simple pictures with little activity (e.g., black and white pictures) generate a very small data quantity, while complicated pictures with great activity (e.g., sport recordings with fast motion) contain a very large data quantity. In a VBR bit stream, each picture has assigned to it the data quantity that will make very good picture quality possible. Consequently, the picture quality of VBR bit streams is generally constant over time and is always at a high level. A CBR bit stream is subject to the restriction that it must have the same bit rate at every moment. The data quantity per picture can vary only within boundaries such that a constant bit rate is still maintained. As a consequence, simple pictures must be coded with a relatively large data quantity, and complicated pictures with a relatively small data quantity. The bit-rate control of the inventive transcoder 4 takes into account the above-mentioned properties of the VBR input bit stream, and it generates a transcoded bit stream which satisfies the CBR properties.

The Applicants hereby amend the paragraph starting on page 12, line 7 of the specification as follows:

The bit-rate control stage 50 has a bit allocation stage 51 to determine the target data quantity for a picture. This stage 51 is connected to an estimation stage 53, which provides to the bit allocation stage 51 the estimated adjustment parameters for picture groups (GOP). The estimated values can include, for example, the GOP length and/or the GOP structure. A verification unit 54 is coupled to the estimation stage 53 and verifies the estimates by the information in the received data bit stream R1. A segment detection stage 55 furnishes another adjustment parameter signal b to the bit allocation stage 51. This segment detection stage 55 detects picture and scene segments. As further signals, the bit allocation stage 51 receives information about the number of bits generated in the transcoding of the last picture (signal c) and information about the average value of the requantization factors of the last picture (signal d). The bit allocation stage 51 also receives information about the target bit rate (signal e) and the picture refresh frequency (signal f).

The Applicants hereby amend the paragraph starting on page 20, line 21 and continuing on page 21 of the specification as follows:

To evaluate the picture quality of the transcoded bit stream, the so-called "peak signal-to-noise ratio" (PSNR) is calculated. A larger PSNR generally represents a better picture quality. The PSNR of the transcoded bit stream of the example is shown in FIG. 7. Both the PSNR for each individual picture and the average value over the entire sequence are shown. The bit stream transcoded to 3 Mbit/s by the inventive transcoder has an average PSNR of 40.39 dB. To be able to evaluate this, the same input bit stream as above is transcoded to 3 Mbit/s by the general transcoder of FIG. 2, and the PSNR is calculated. The bit stream transcoded to 3 Mbit/s with the general transcoder has an average PSNR of 40.35 dB. The inventive transcoder thus provides approximately the same picture quality as the general transcoder. Significantly, the inventive transcoder, despite its lesser complexity and lesser memory requirements, provides nearly the same performance as the general transcoder and, as has appeared, in some cases even better. The extremely high expense of implementing the transcoder of FIG. 2 thus can be avoided. The results of this example are representative and can be reproduced for other test sequences and bit rates.

The Applicants hereby amend the paragraph starting on page 22, line 13 and continuing on page 23 of the specification as follows:

FIG. 8 is a block diagram illustration of a digital transcoder embodiment. The transcoder 4 is used in a digital video recording system to record digital data on a memory medium 80 with a data bit stream R2, having a constant bit rate that is independent of the bit rate of the received data bit stream R1. For this purpose, the input of the transcoder 4 is connected to a digital video source, e.g., a digital video disk 6965 or a signal source 6860, which furnishes a digital video broadcasting signal (DVBS, DVBC, DVBT). The appropriate signal source 6860 or 65-69 can be selected through a switch 70. Through a switch-over device 71, the signals from the signal sources 6860 or 6965 can be conducted to the memory medium 80, directly through a connection line 72, or they can be stored there with a reduced bit rate, if the switches of the switch-over device 71 are in the position shown in FIG. 8. In this switch position, the received data bit stream R1 or R1' is conducted through the transcoder 4, and is stored in the memory medium 80 with a reduced and constant bit rate. With the switch position shown in FIG. 8, a "longplay record function" can be achieved, since the memory medium 80 contains memory data with a reduced bit rate. The memory medium 80 can be, for example, a magnetic tape or a semiconductor memory. Its picture-taking or sound-recording time is thus significantly increased through the inventive transcoder 4.